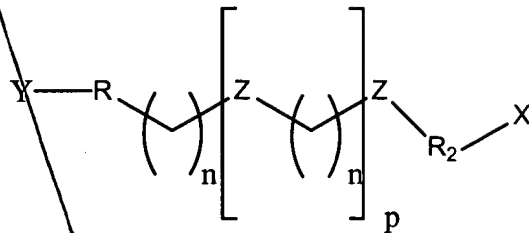


We claim:

1. A nanocrystal linker arm of the following formula:



$n \text{ \& } p = 0-10$   
 $Z = O, CH_2, \text{ or } NH$

(I)

*all pat. over 731  
 when  $\tau$   $CH_2$ ?  
 $\tau$  " "*

wherein Y represents the attachment point to the nanocrystal and  
 X represents the attachment point of an organic compound;

R is a bond or is selected from the group consisting of:

SH,

$O(CH_2(n)O)_nSH$ ,

$NH(CH_2(n)O)_nSH$ ,

$NH(CH_2(n)NH)SH$ ,

$S(CH_2(n)O)_nSH$ , and

$S(CH_2(n)S)SH$ ;

n is 1-10; S is the attachment point for the nanocrystal;

$R_2$  is a bond or selected from the group consisting of

carbonyl,

NH,

SH,

CONH,

COO,

S,

C<sub>1-10</sub> alkyl,

carbamate, and

thiocarbamate; and wherein

when n and p are 1 or more, the resulting carbon or carbon chain may be substituted.

2. The nanocrystal linker arm of claim 1, where Z is O and n and p are 1-5.

3. The linker arm of claim 1, wherein the attachment point for an organic compound is for an biologically active compound.

4. The linker arm of claim 1, wherein the attachment point is for organic compounds selected from the group consisting of: serotonin or serotonin derivatives, cocaine analogues, phenyl tropane analogues,

phenylisopropylamine derivatives, dopamine derivatives, melatonin derivatives, chlormethiazole derivatives, derivatives of RTI-4229-75, and derivatives of GBR 12935.

5 5. The linker arm of claim 1, wherein Y is an attachment point for nanocrystals with cross sections less than about 200 angstroms.

6. The linker arm of claim 1, wherein Y is an attachment point for nanocrystals selected from the group consisting of CdSe, CdS, PbSe, PbS, and CdTe nanocrystals.

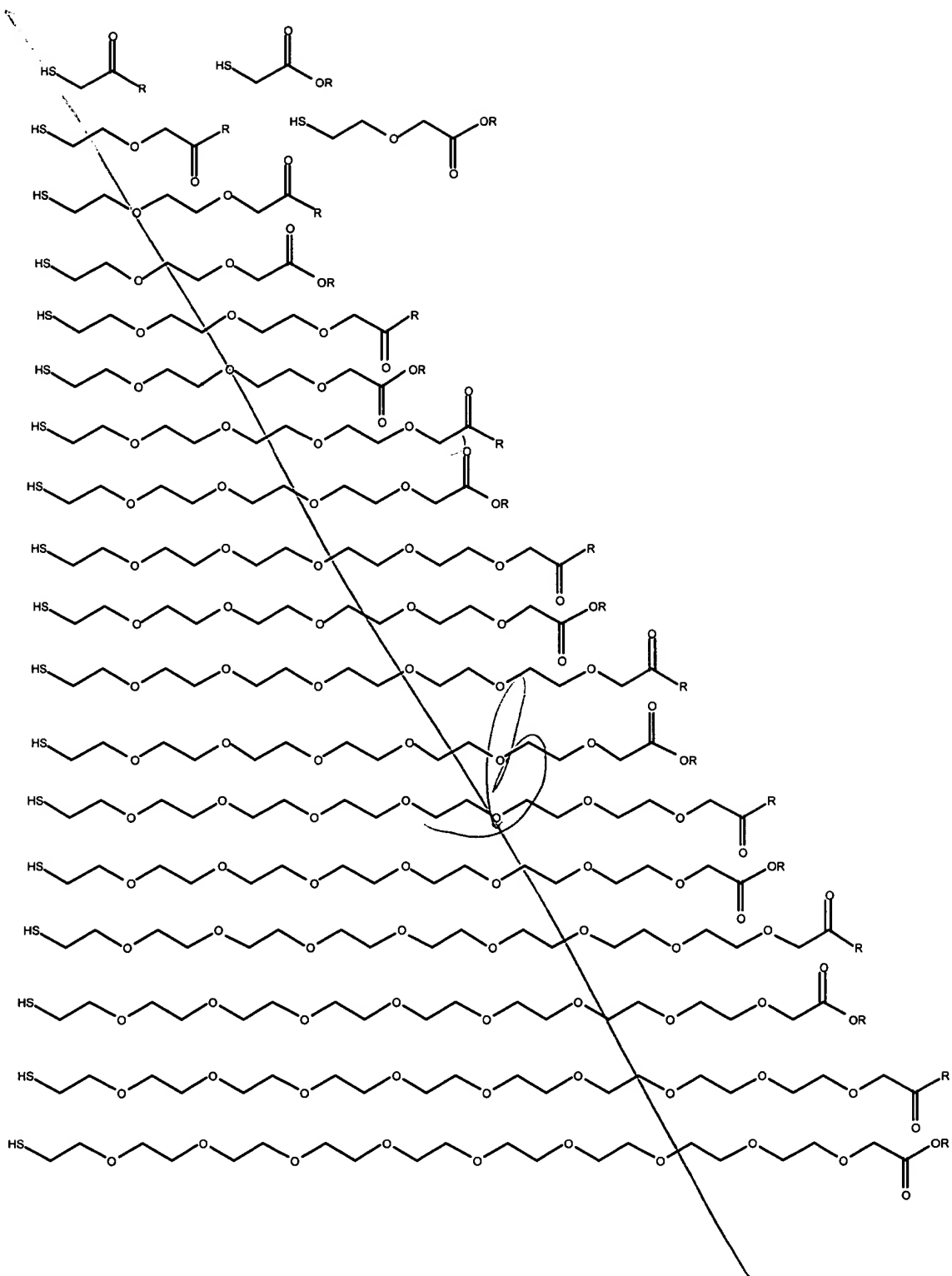
7. The linker arm of claim 1, wherein the linker arm is selected from the group consisting of:

T 0346250 " 02 245800

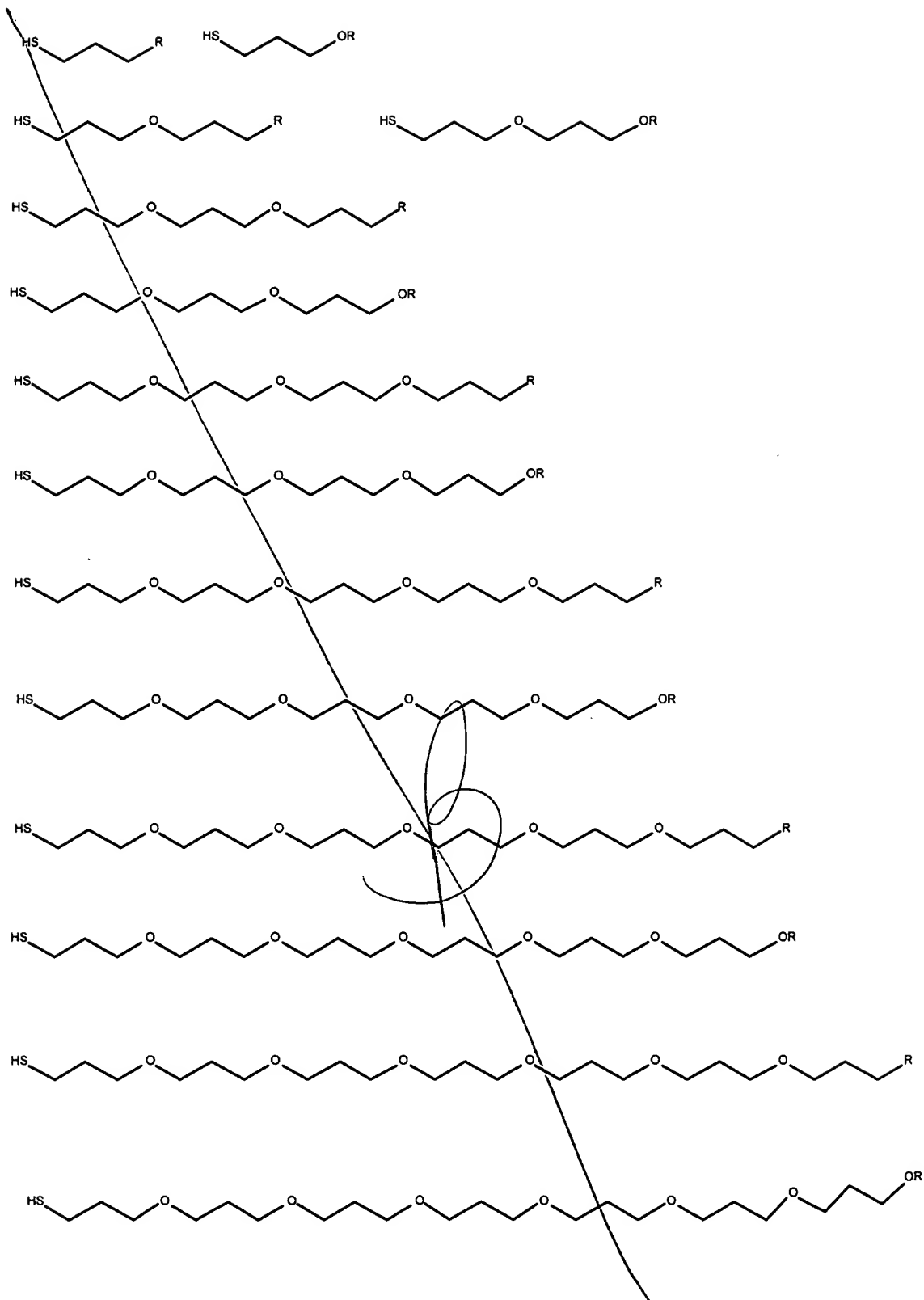
15



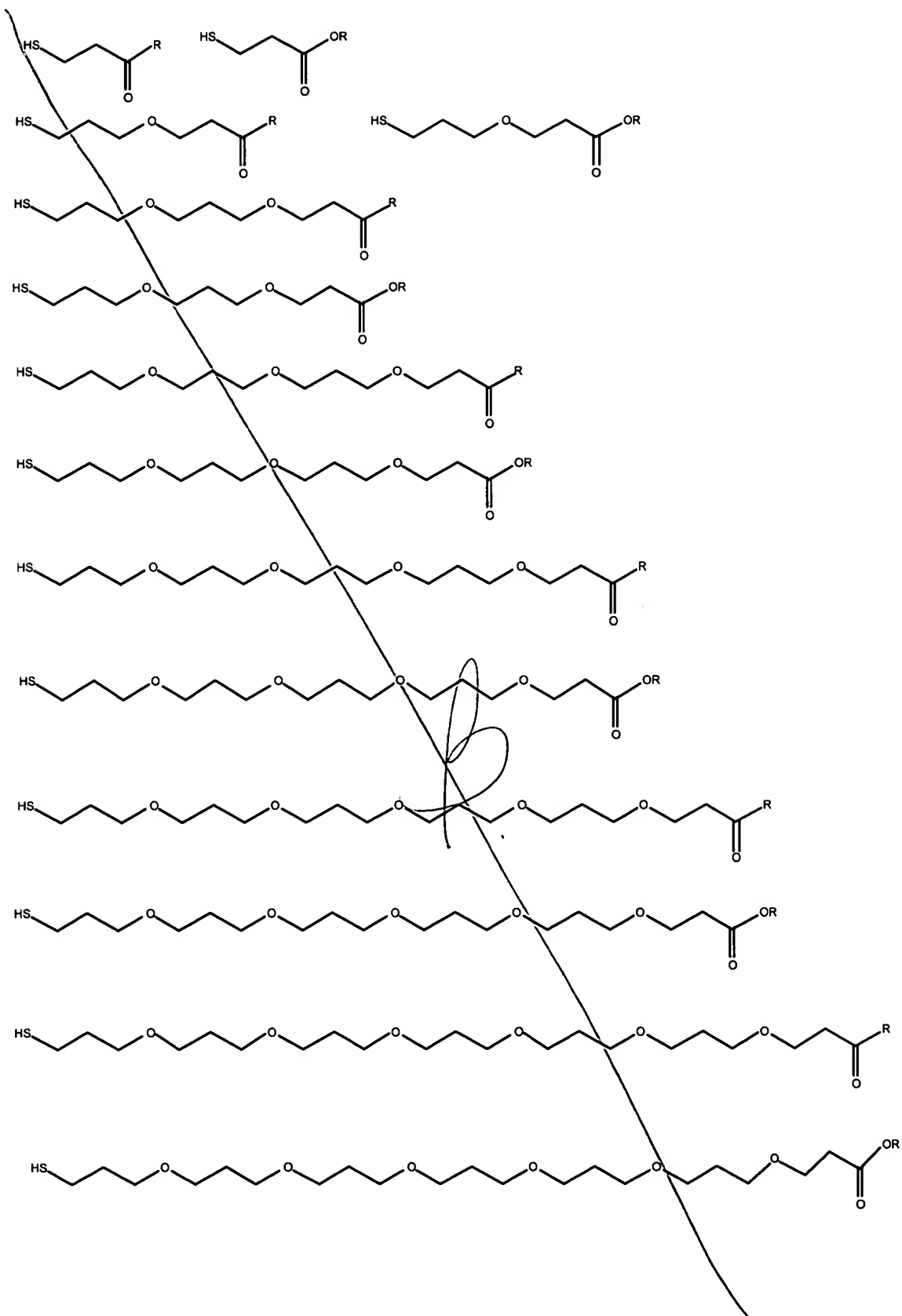
106250 8249880

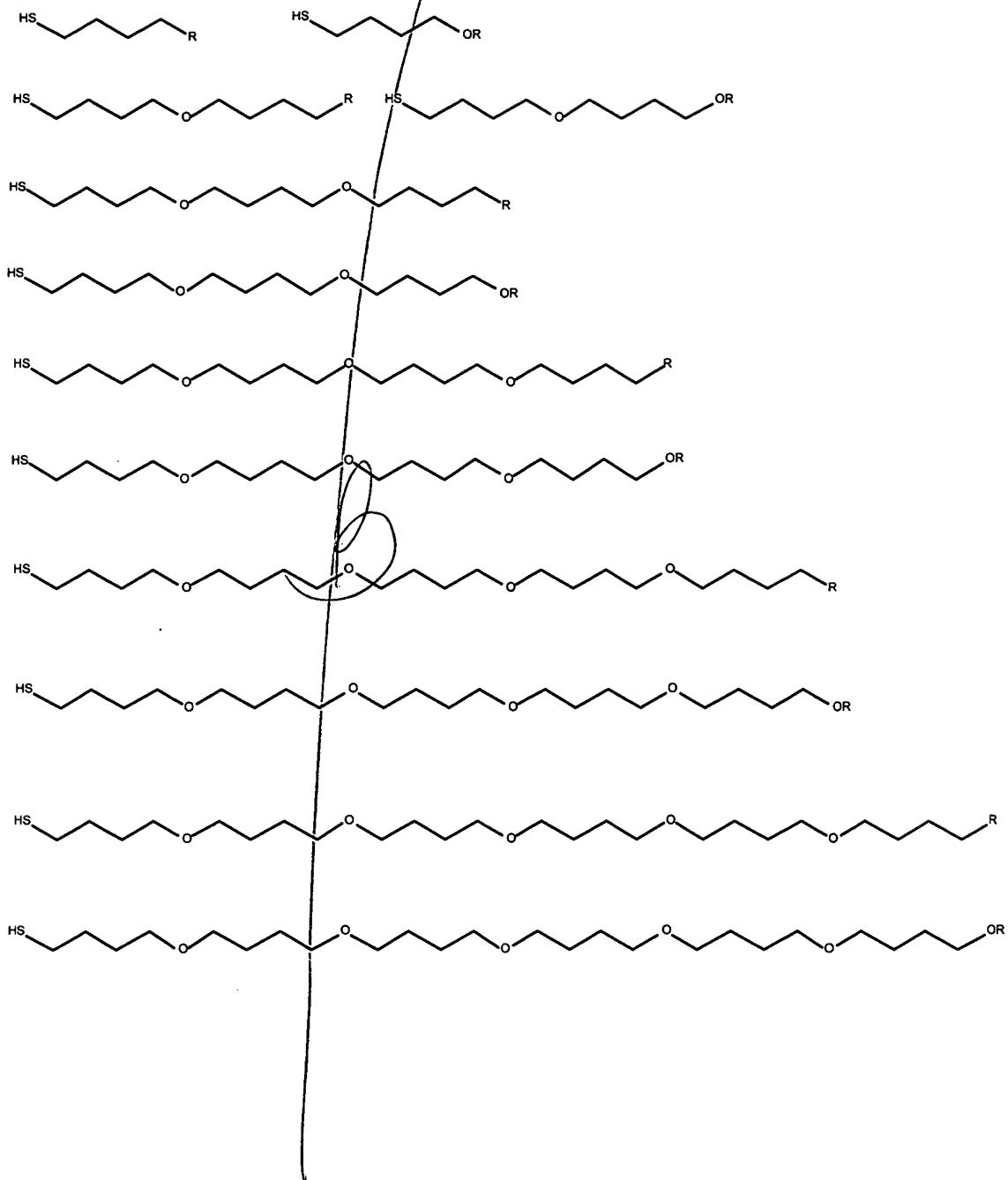


034250-024360



108

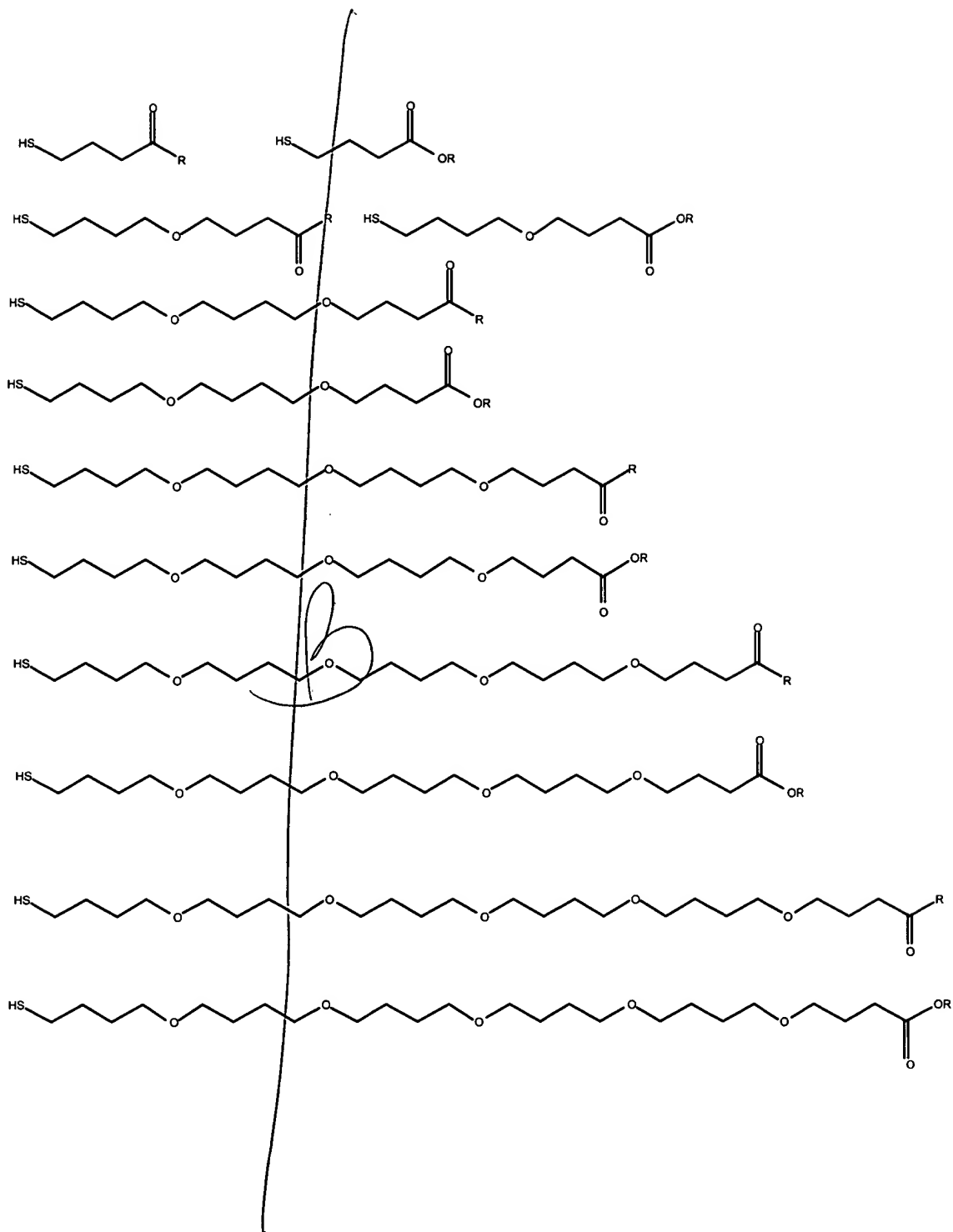




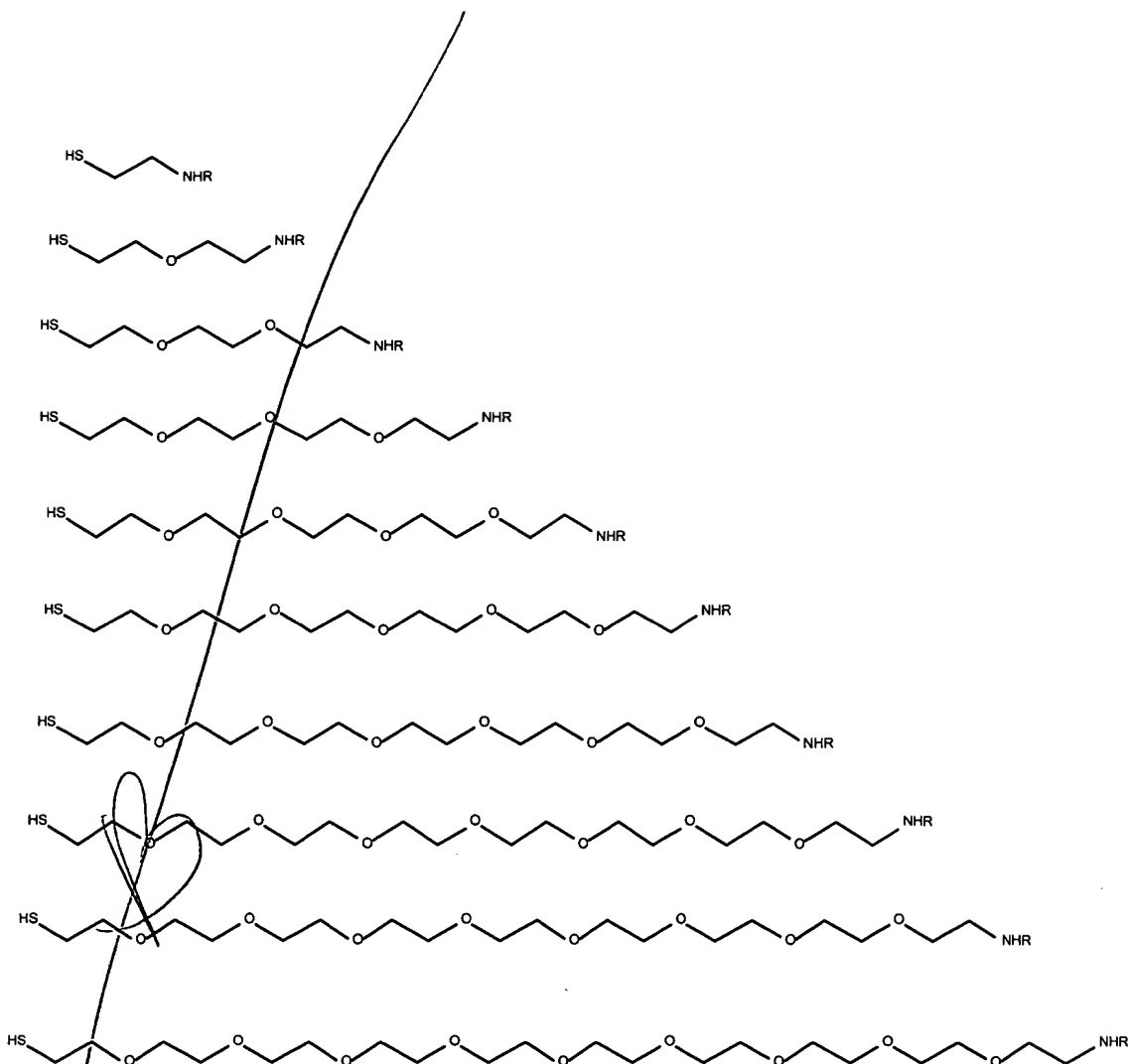
**SECRET**



0324990



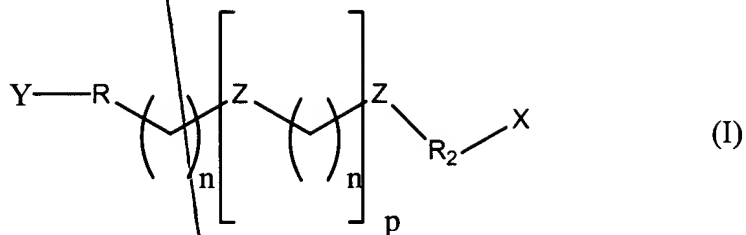
04250 3249860



wherein R represents the point of attachment of an organic

5 compound.

8. A nanocrystal compound of the following formula:



n & p = 0-10  
 Z = O, CH<sub>2</sub>, or NH

wherein Y represents the attachment point to the nanocrystal and  
 X represents the attachment point of an organic compound;

R is a bond or is selected from the group consisting of:

SH,

O(CH<sub>2</sub>(n)O)<sub>n</sub>SH,

NH(CH<sub>2</sub>(n)O)<sub>n</sub>SH,

NH(CH<sub>2</sub>(n)NH)SH,

S(CH<sub>2</sub>(n)O)<sub>n</sub>SH, and

S(CH<sub>2</sub>(n)S)SH; n is 1-10, with S being attached to the

nanocrystal;

Sub B2  
R<sub>2</sub> is a bond or selected from the group consisting of

carbonyl,

NH, SH,

CONH,

5 COO,

S,

C<sub>1-10</sub> alkyl,

carbamate, and thiocarbamate; and wherein

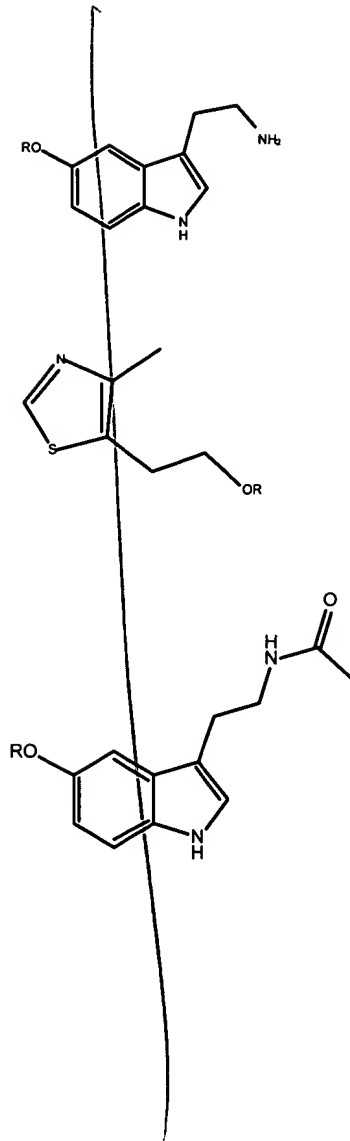
when n and p are 1 or more, the resulting carbon or carbon chain  
10 may be substituted.

9. The nanocrystal compound of claim 8, wherein the organic  
compound is selected from the group consisting of: serotonin or  
serotonin derivatives, cocaine analogues, phenyl tropane analogues,  
15 phenylisopropylamine derivatives, dopamine derivatives, melatonin  
derivatives, chlormethiazole derivatives, derivatives of RTI-4229-75, and  
derivatives of GBR 12935.

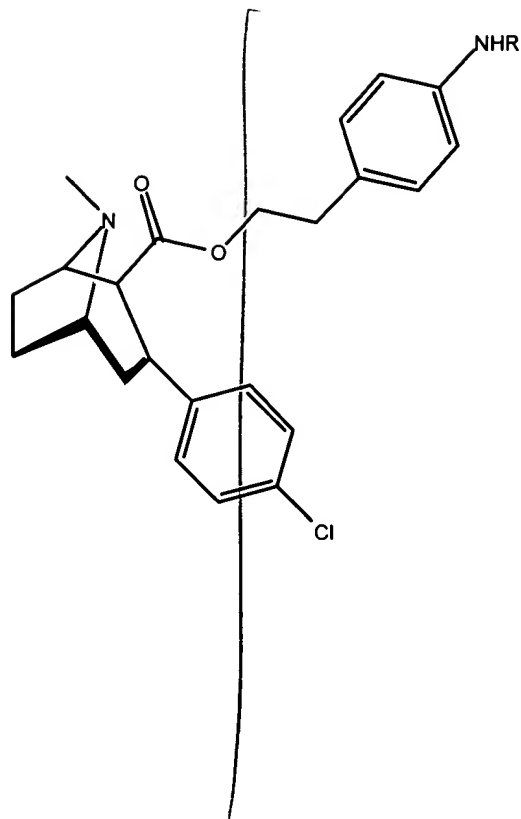
10. The nanocrystal compound of claim 8, wherein the organic  
20 compound is selected from the group consisting of:

sub B2

**COPIES OF THE**



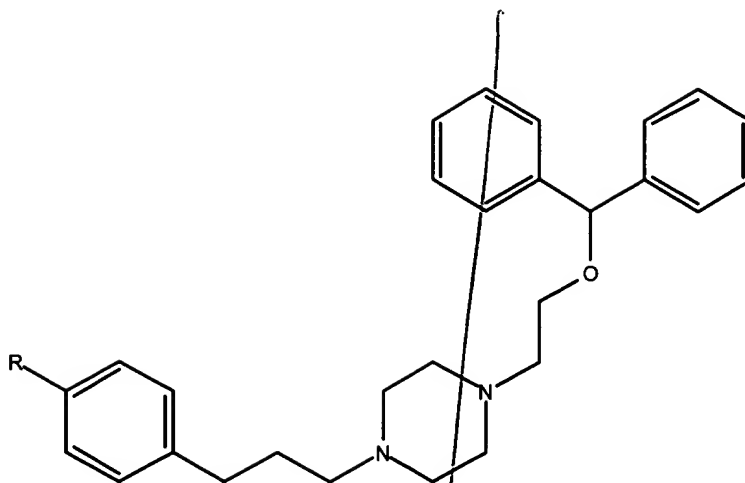
sub  
B2



704250" 82449860

5

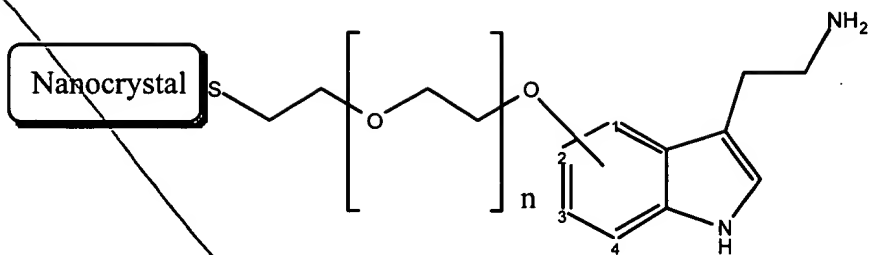
10



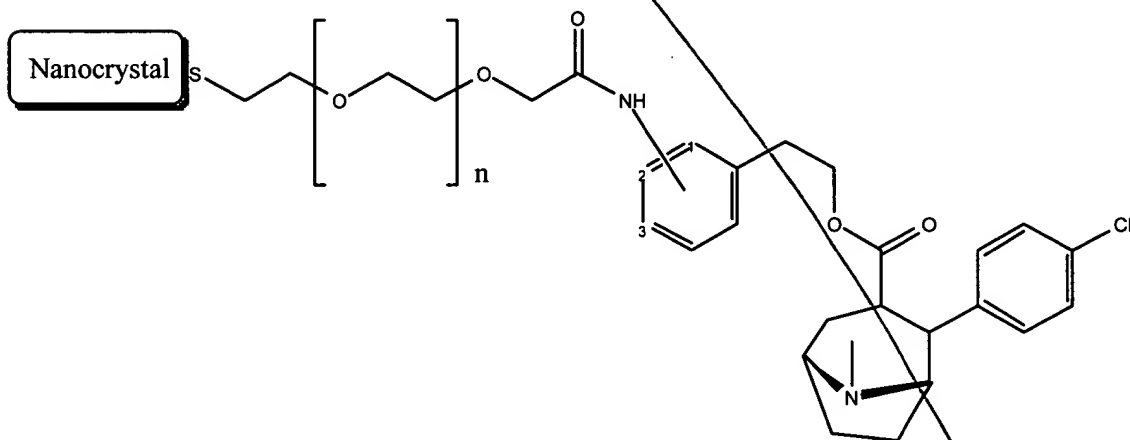
wherein R represents the attachment point to the linker arm.

11. The nanocrystal compound of claim 8, selected from the group consisting of:

sub  
B2



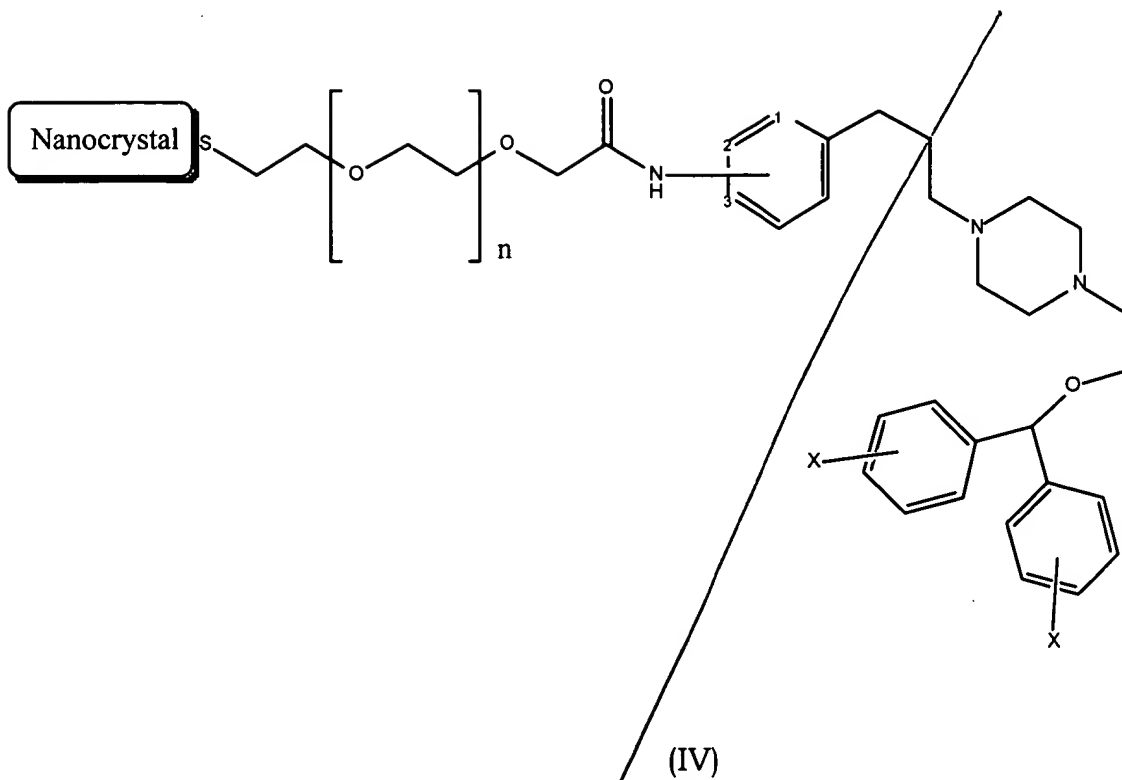
(II)



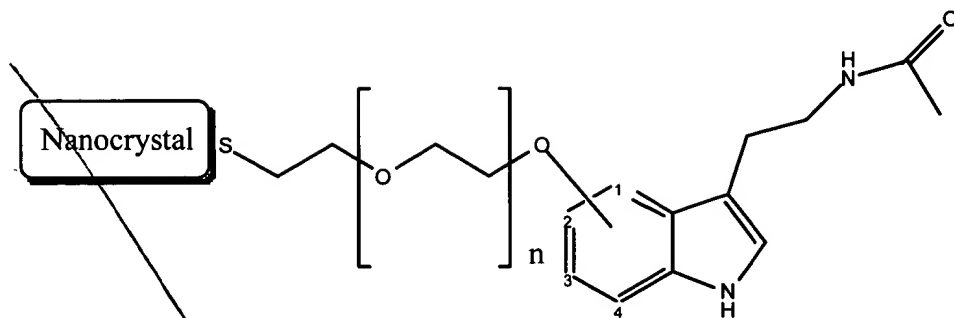
(III)

FIG. 20-243800

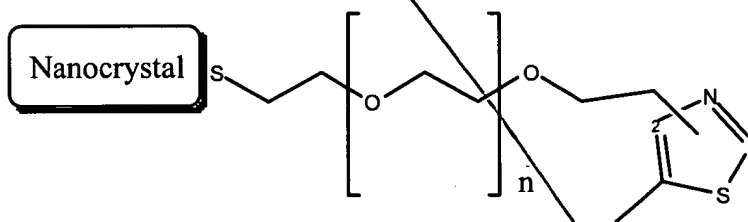




704250-824980

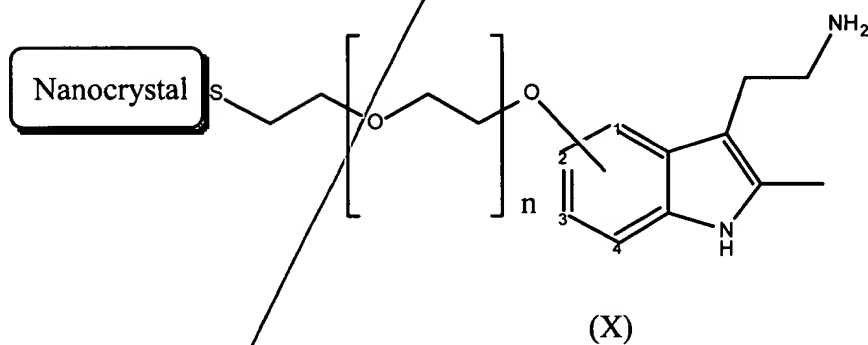
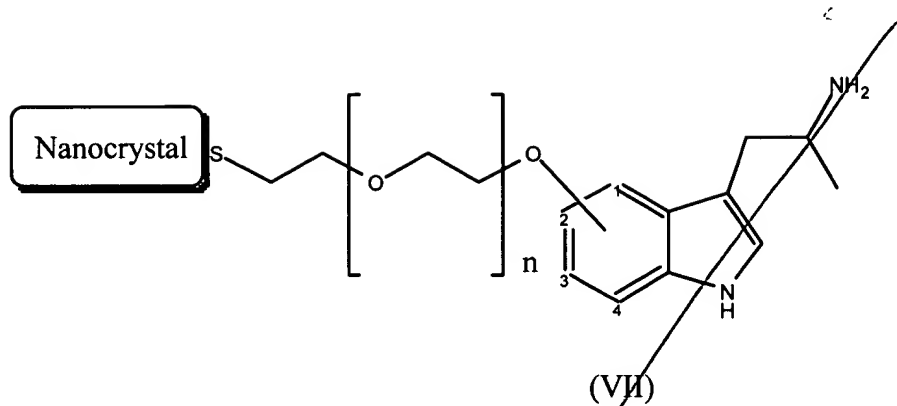


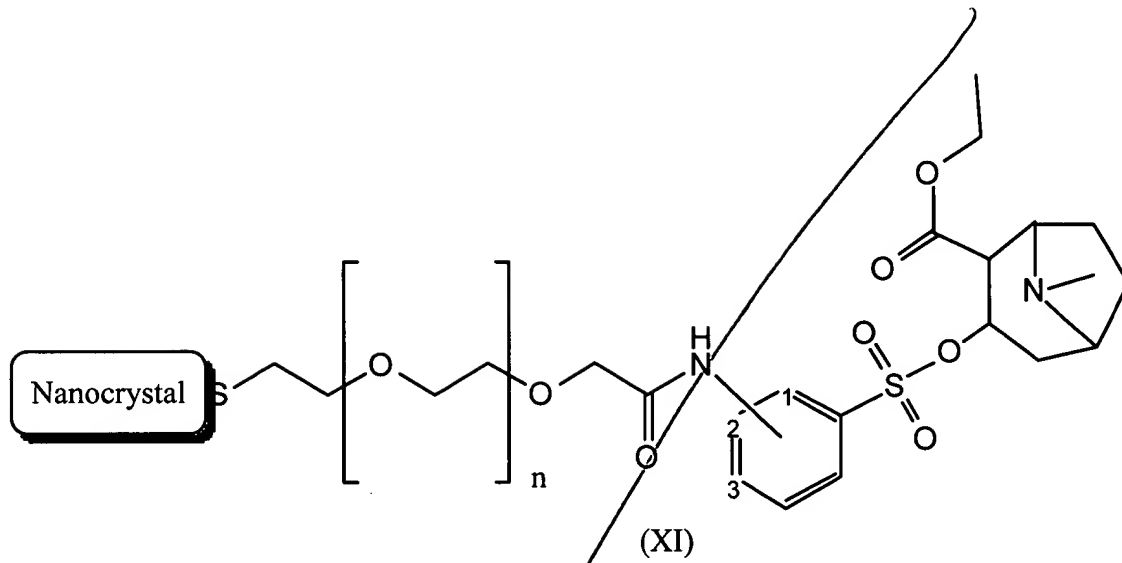
(V)



(VI)

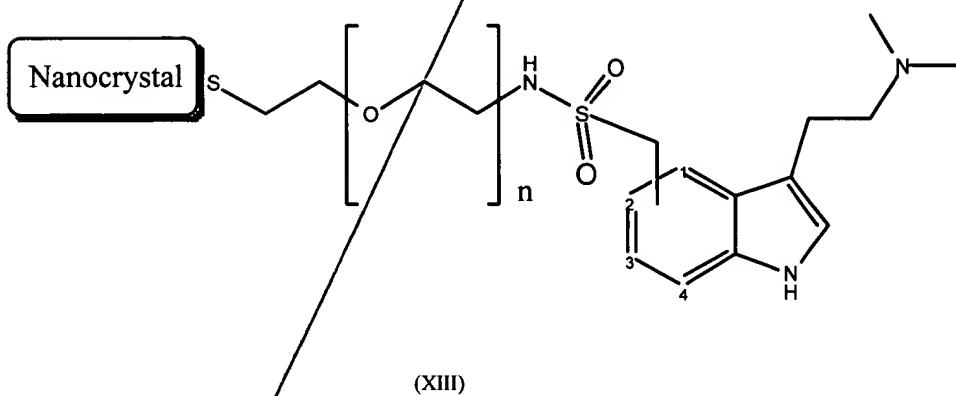
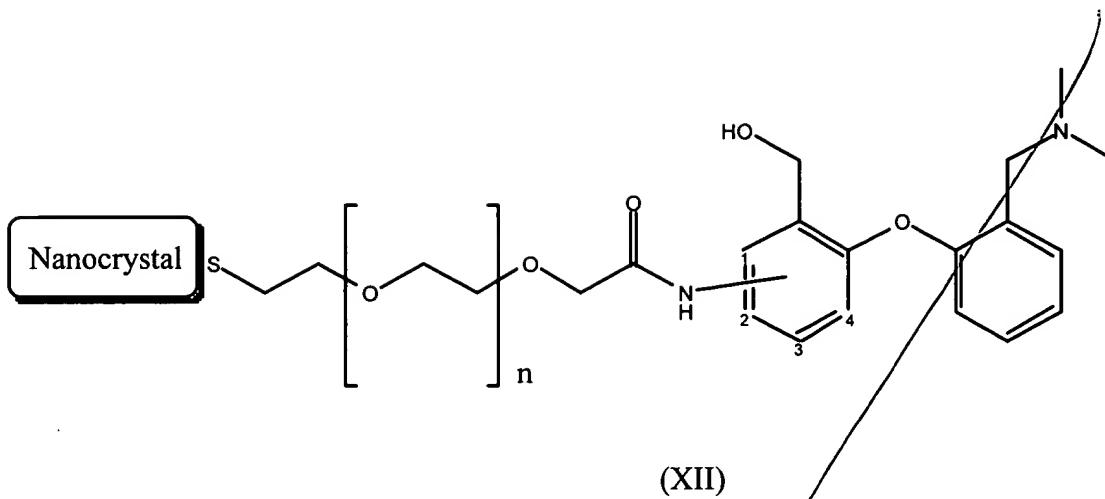
0054730-0249860





For USPTO 2024-09-05

5



wherein  $n = 0-10$  and X is H or halogen.

Sub B2  
12. The nanocrystal compound of claim 8, wherein the nanocrystal has a cross section of less than about 200 angstroms.

5

13. The compound of claim 8, wherein the nanocrystal is selected from the group consisting of CdSe, CdS, PbSe, PbS, and CdTe.

14. The compound of claim 8, wherein the organic compound is capable of binding to an affinity molecule, the affinity molecule being a monoclonal antibody, polyclonal antibody, monomeric nucleic acid, oligomeric nucleic acid, protein, polysaccharide, sugar, peptide, drug, ligand.

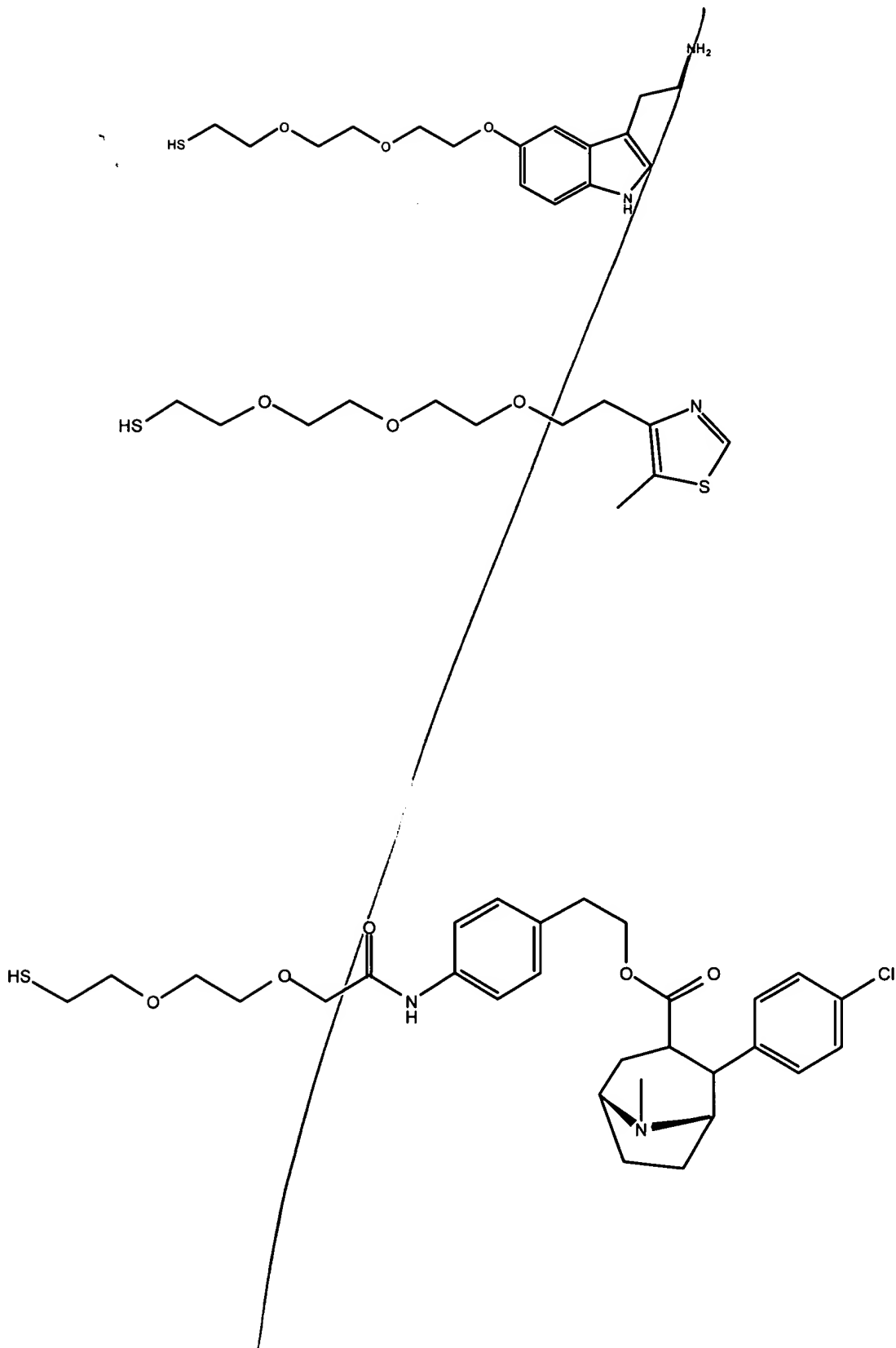
15. The compound of claim 8, wherein the organic compound is serotonin.

16. The compound of claim 8, selected from the group consisting of:

Sub  
B2

10/12/2010 10:24:56

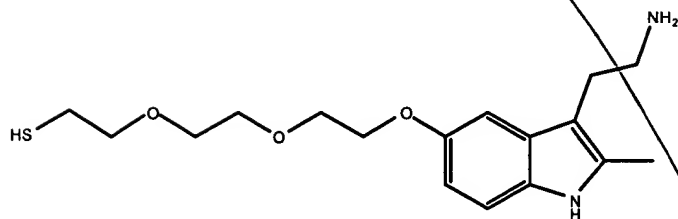
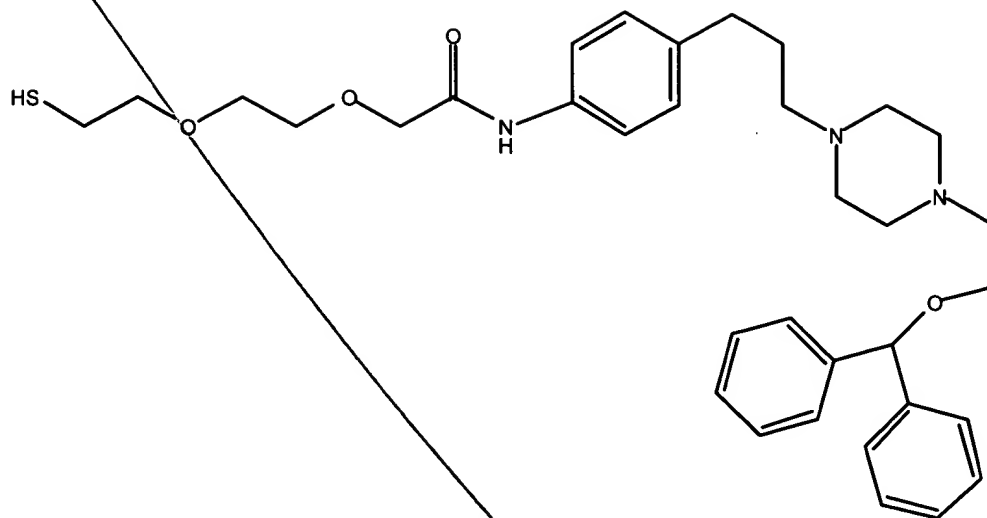
5



Sub  
22

104250-3249860

5



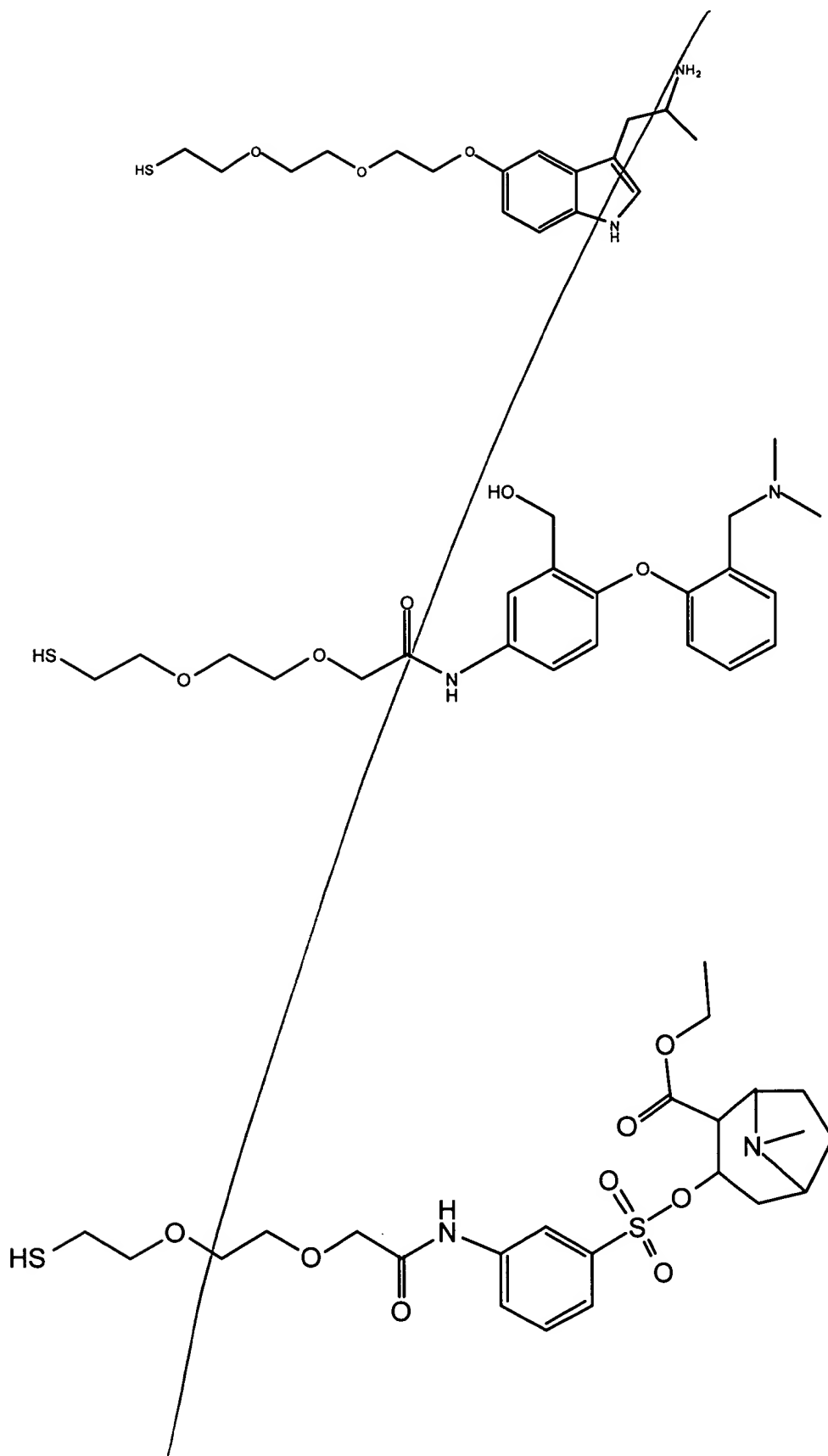
10



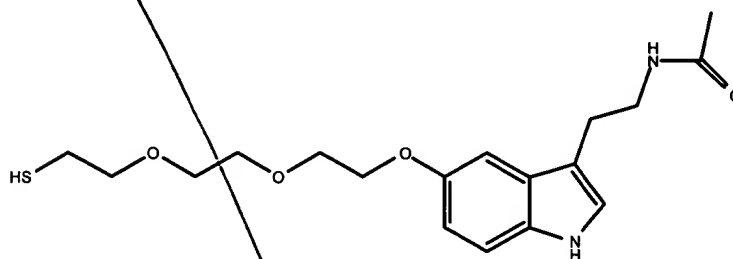
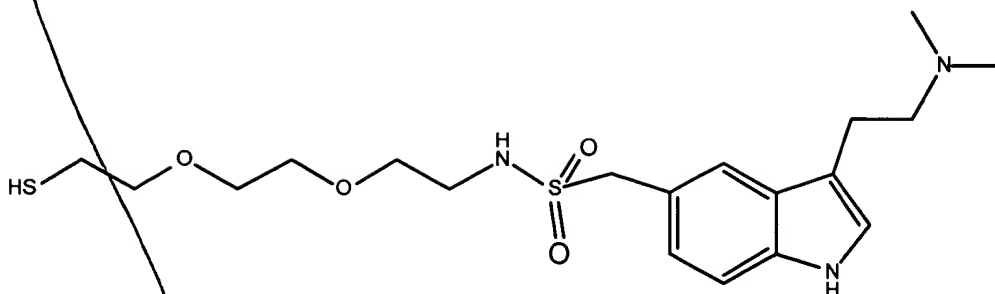
Sub  
B2

FOIA b 7 - D

5

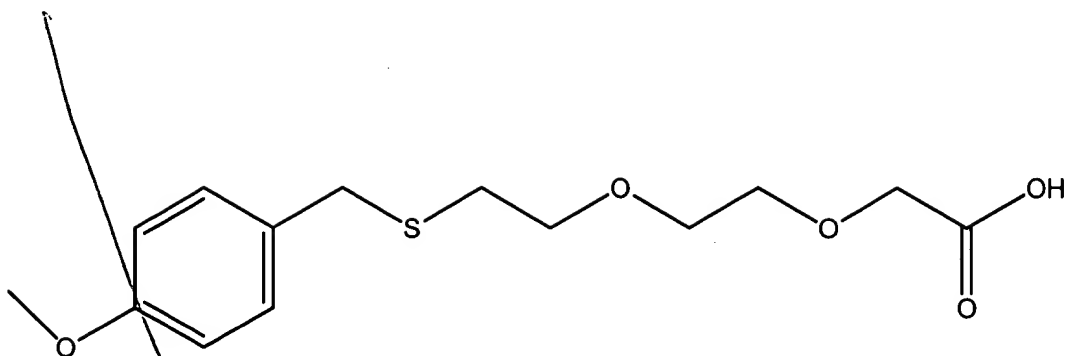


Sub  
B2

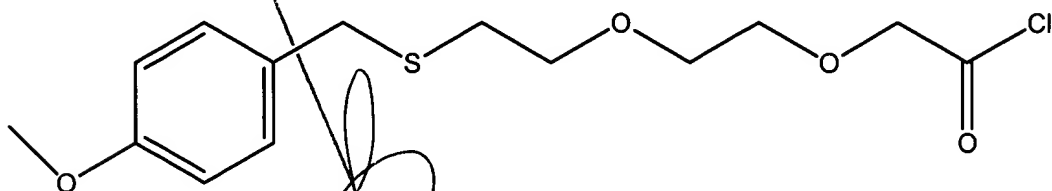


wherein S is the attachment point for the nanocrystal.

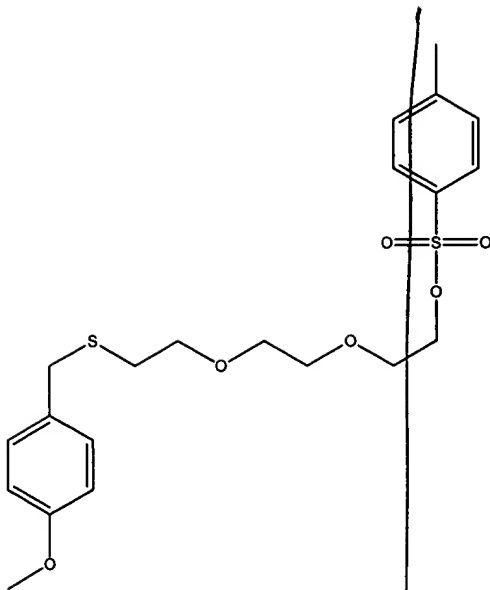
17. A compound of the following formula:



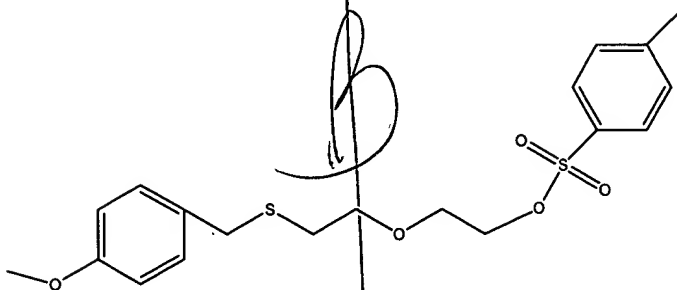
18. A compound of the following formula:



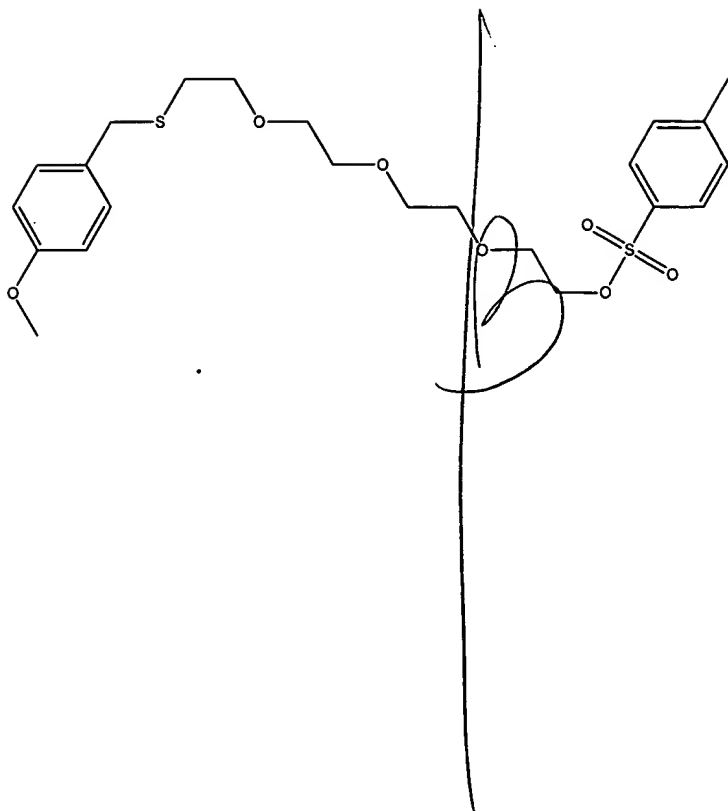
19. A compound of the following formula:



20. A compound of the following formula:



21. A compound of the following formula:



104230-824980